California Debt and Investment Advisory Commission

Investing Public Funds: Fundamentals of Managing Your Portfolio

# Investment Concept Fundamentals

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# Portfolio Management

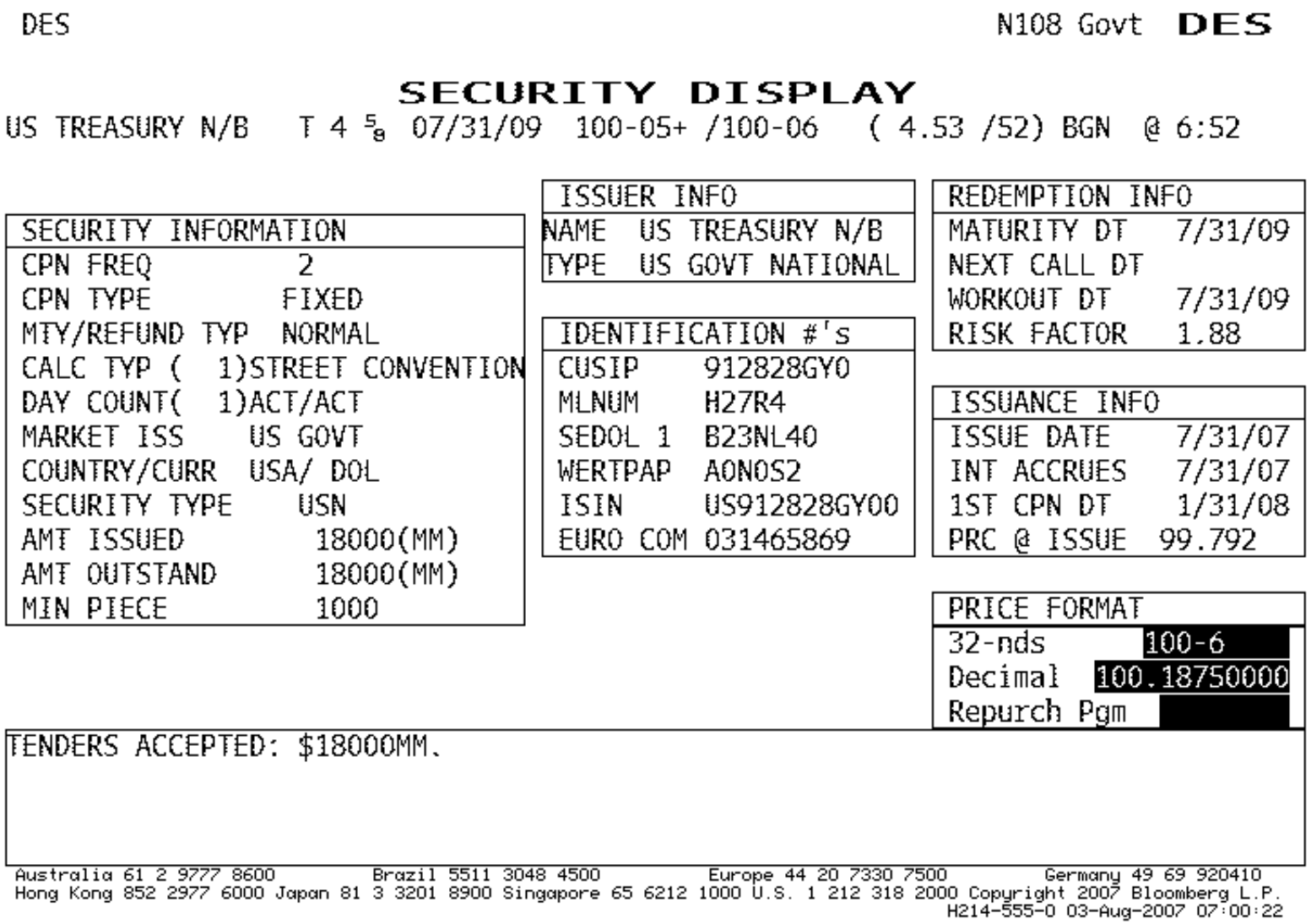
- Key Terms
- Investment policy
- Risk and reward
- Investment instruments
- Portfolio strategies
- Evaluation of the investment program

# Key terms

# Key Terms

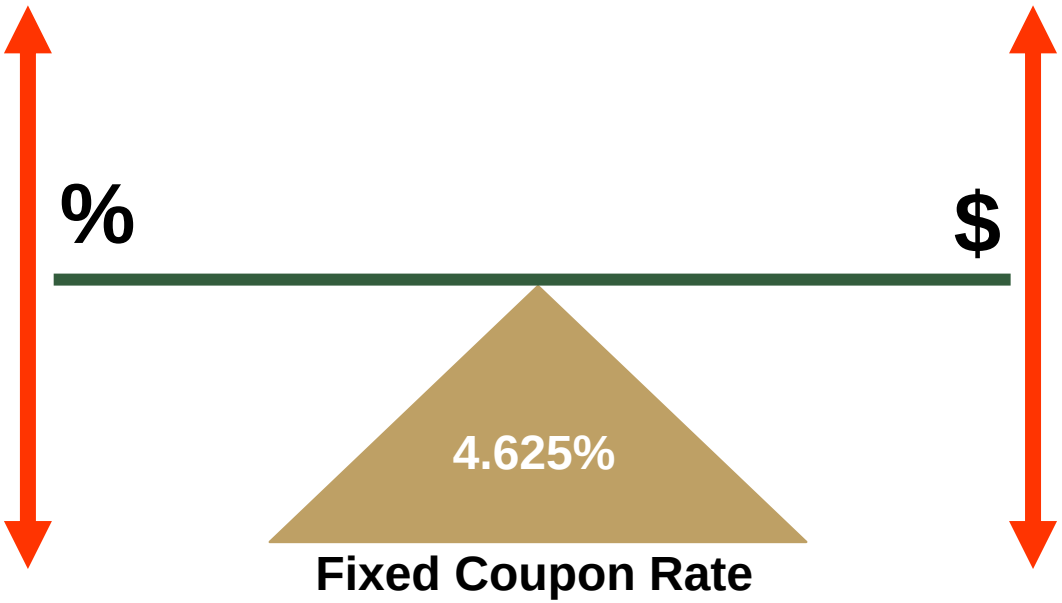
- Fixed-income securities
  - Issuer
  - Maturity
  - Coupon
  - Yield
- Price yield relationship
- Basis point (1/100 of 1% or .0001)
- Spread
  - Tsy = 4.20%; Agency = 4.85%; Spread = 4.85 – 4.50 = 55 bps
- Yield curve

# Treasury 4.625% 7/31/09 - Description

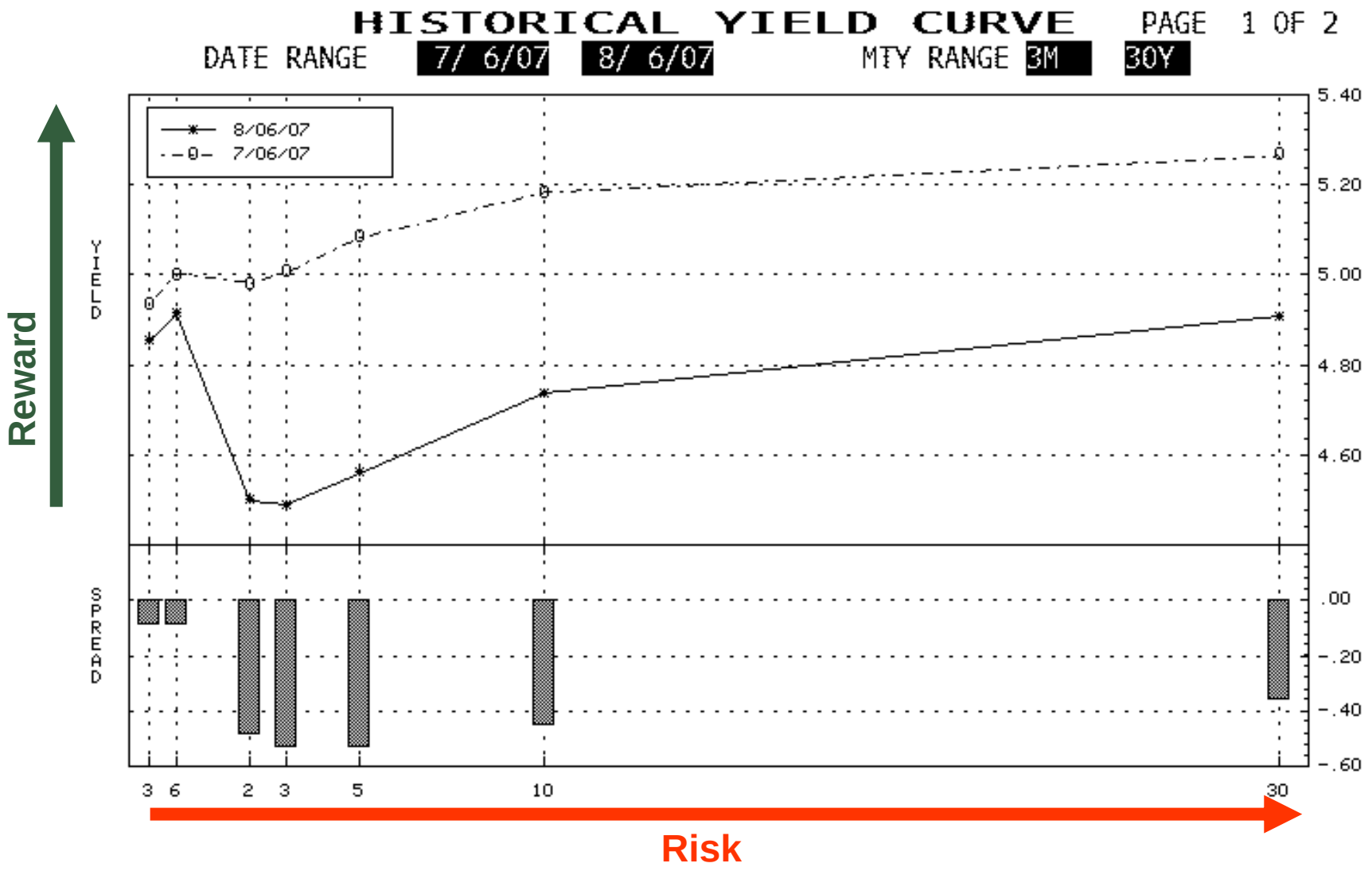



Source: Bloomberg L.P.

# Yield & Price Inversely Related



# Treasury Yield Curve




Source: Bloomberg L.P.

# Investment Policy

# Why an Investment Policy?

- Defines investment program
  - Legal & permitted activities
  - Who's in charge
  - Measurement of results
  - Relationship to counterparties
- Protection
- Dynamic process

# Components of an Investment Policy - 1

1. Statement of Intent
2. Scope
3. Statement of Prudence
4. Objectives
5. Delegation of Authority
6. Investment Procedures
7. Ethics and Conflicts of Interest
8. Authorized Financial Dealers & Institutions

# Components of an Investment Policy - 2

9. Authorized & Suitable Investments
10. Safekeeping and Custody
11. Diversification
12. Internal Controls
13. Performance Standards
14. Reporting
15. Investment Policy Adoption

# First: understand the objectives

- Primary objectives of investment activities
  - Safety
    - Mitigate credit risk
    - Mitigate Interest Rate Risk
  - Liquidity
    - Meet anticipated cash flow requirements
    - Since all possible demands cannot be anticipated, hold securities that have active secondary markets
  - Yield / Rate of Return
    - Earn a reasonable return relative to the risk being assumed
- Be explicit, quantify objectives and write them into the policy to create the foundation of an effective investment program

# What Is a Cash Flow Forecast?

- Projection of anticipated receipts
- Projection of anticipated disbursements
- Estimate of investable cash balances
  - Liquid funds
  - Core funds

# Why Prepare a Cash Flow Forecast?

- Improves investment earnings
- Ensures liquidity for disbursements
- Identifies short-term cash deficits
- Warns of impending budget problems

# Risk and Reward

# Identifying portfolio risks

- Market Risk
- Liquidity risk
- Reinvestment risk (Callables)
- Credit Risk (Non-governmental Issuers)
- Other—political, job, etc.

# Portfolio management *is* risk management

- The greater an investor's exposure to properly *diversified* risk, the higher the expected return over time.
- The greater an investor's exposure to risk, the higher will be the volatility of return from period to period.
- The objective of "safety" requires establishing risk constraints.

# Exposure to interest rate fluctuations – market risk

- Market risk
  - Securities prices change as interest rates change—in the opposite direction
  - Market risk is best measured as *modified duration*
  - Measure *effective duration* instead when securities have a call feature

# What is duration, anyway?

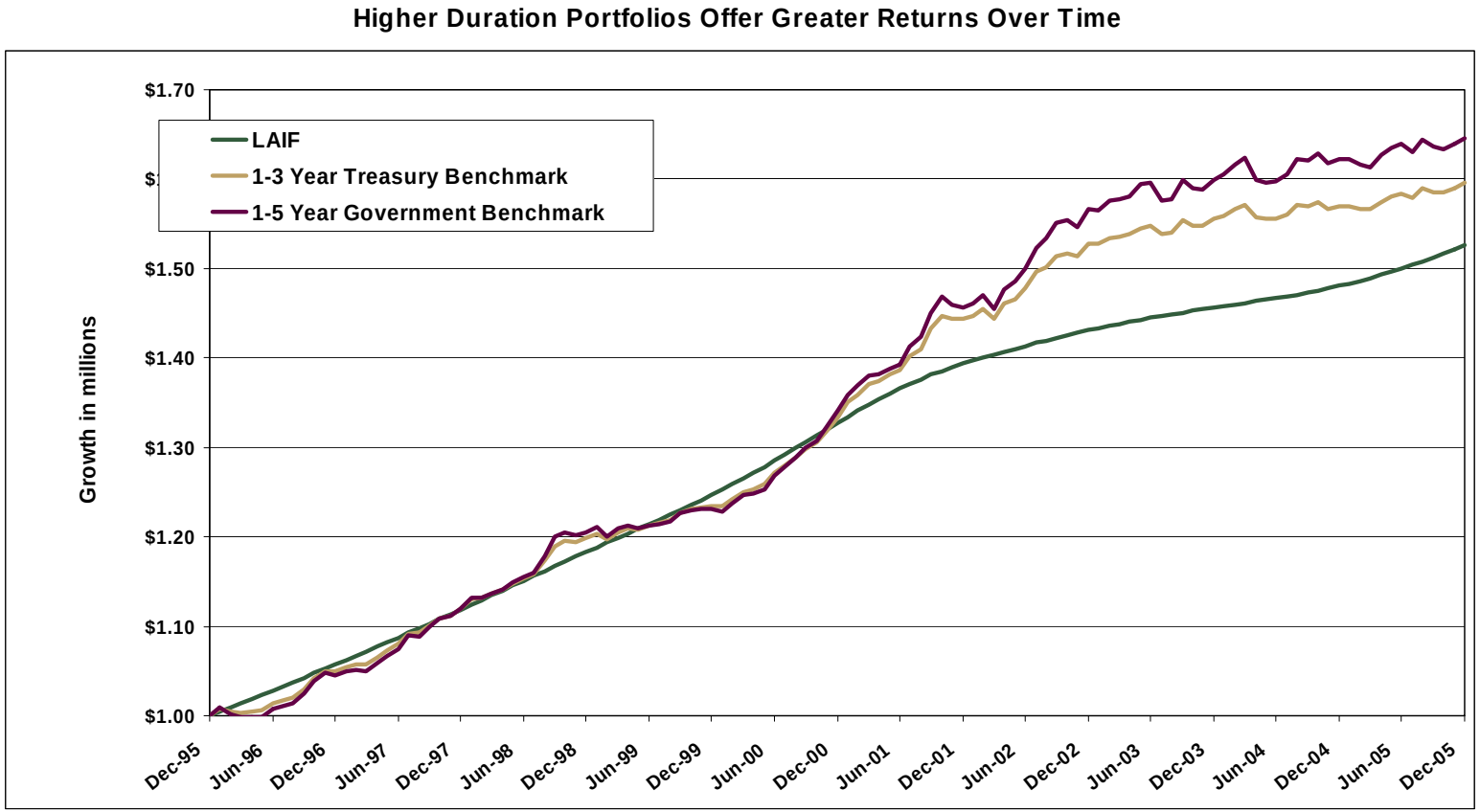
- Modified duration measures the percent change in price of a security for a 1 percent change in yields.
- Since market prices decline when yields rise, and rise when yields decline, duration is multiplied by –1 and then multiplied by the change in yield.
- We can’t predict interest rates, but, using duration, we can calculate approximately how much the portfolio market value will change with a given, instantaneous change in interest rates

# What is duration, anyway?

- **Portfolio size = $50 million**
- Portfolio duration = 2
- Interest rate Δ = +2.25%
- Portfolio MV Δ = $50 million x 2 x 2.25% x -1 = $50 million x -4.5%
- **MV Δ = ($2,250,000)**
- Interest rate Δ = -2.25%
- Portfolio MV Δ = $50 million x 2 x (2.25%) x -1= $50 million x +4.5%
- **MV Δ = +$2,250,000**

- **Portfolio size = $50 million**
- Portfolio duration = 1
- Interest rate Δ = +2.25%
- Portfolio MV Δ = $50 million x 1 x 2.25% x -1= $50 million x -2.25%
- **MV Δ = ($1,125,000)**
- Interest rate Δ = -2.25%
- Portfolio MV Δ = $50 million x 1 x (2.25%) x -1= $50 million x +2.25%
- **MV Δ = +$1,125,000**

# Greater Risk, Higher Returns Over Time

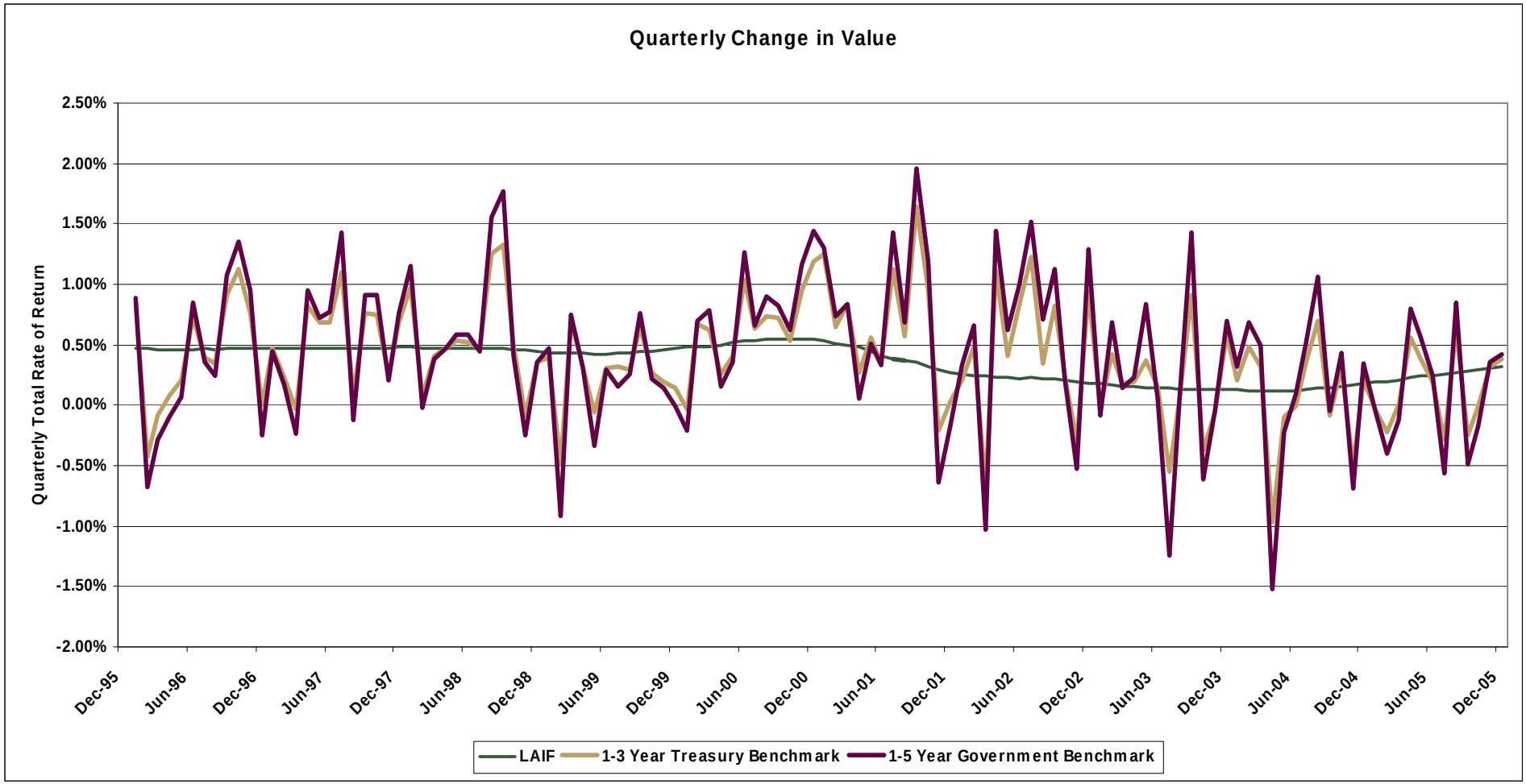



*Source: Index return information provided by Merrill Lynch*

| Value on 12/31/2005 of $1 million invested 12/31/1995 | | |
|---|---|---|
| | 12/31/2005 | Annualized Return |
| LAIF | $1,525,924 | 4.32% |
| 1-3 Year Treasury Benchmark | $1,596,461 | 4.79% |
| 1-5 Year Government Benchmark | $1,646,268 | 5.11% |

# Greater Risk, Higher Volatility of Return

## Higher Duration Portfolios Have Greater Volatility of Return



# Choosing the portfolio's target duration

- Some considerations regarding exposure to market risk
  - Short-term investments sufficient to meet cash needs
  - Agency need for portfolio income and growth
  - Agency appetite for market value fluctuations (GASB 40 considerations)
  - Statutory and policy considerations

# Liquidity risk

- Liquidity risk (2 definitions)
  1. The risk that the portfolio won't provide adequate cashflow for the agency
  2. The risk that a security can't be sold, if necessary, at a good price
     - Measured by such factors as the difference between bid and ask
     - Number of market makers for the issue

# Reinvestment risk

- ***Reinvestment risk:*** cashflows from a bond must be reinvested at the market rate at the time the cashflow occurs
  - Interest payments
  - Principal paid at maturity
  - Paydowns from mortgage securities
  - Principal from called bonds

# What About Callable Securities?

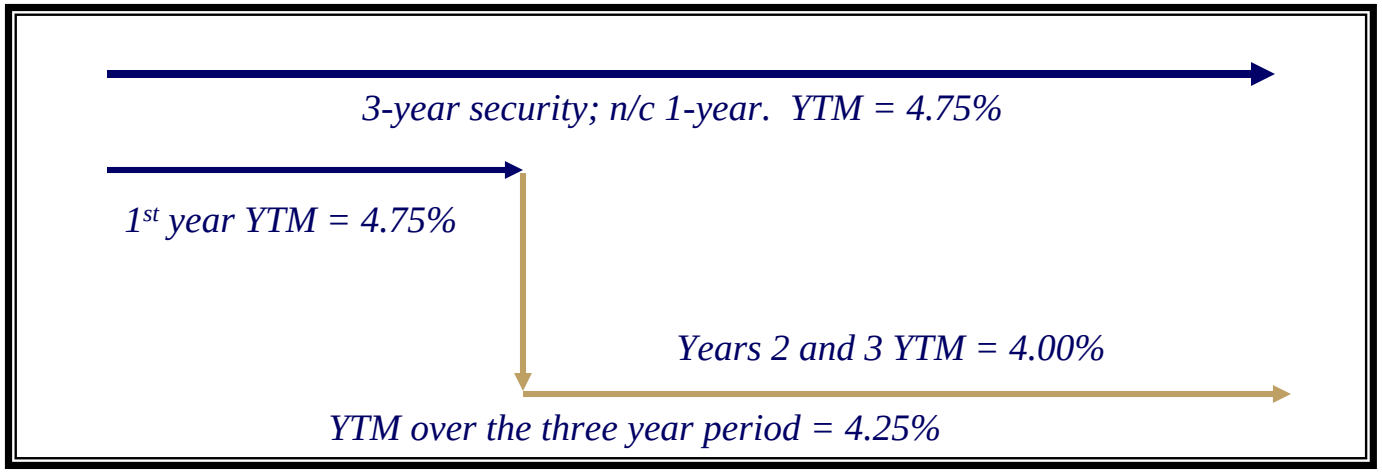
- When interest rates fall, callable securities tend to be called away by the issuer
  - Resulting in reinvestment at lower interest rates
- When interest rates fall, the duration of callable securities tends to decline
  - But longer duration portfolios perform better in falling rate environments
- When rates rise, callable securities are generally not called
  - Resulting in no opportunity for reinvestment at higher rates
- When rates rise, the duration of callables extends
  - Resulting in greater portfolio market value decline
- When rates are stable callable bonds tend to outperform non-callable structures

# Reinvestment Risk At Work

Example Using a Callable Bond

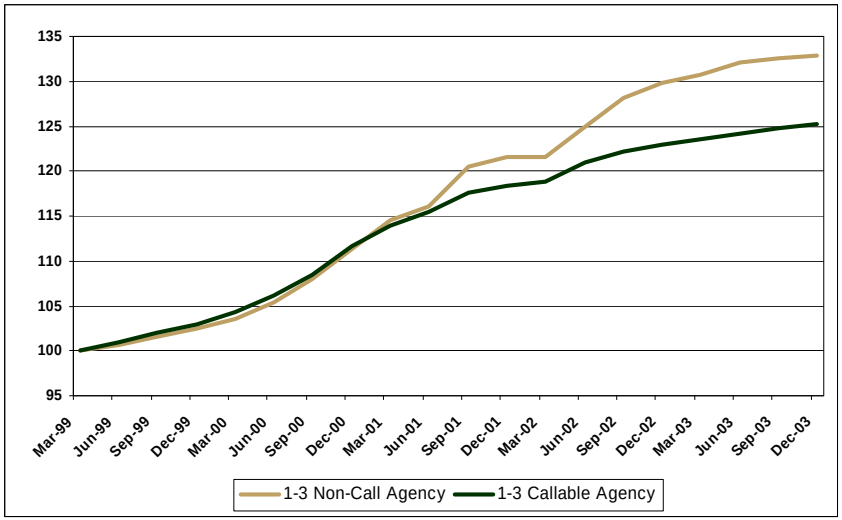
I.

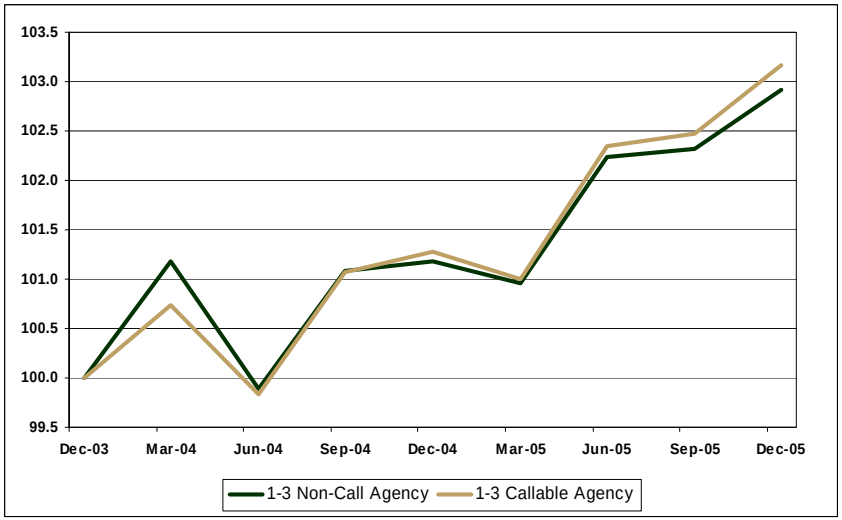

II.



# Reinvestment risk—callable securities

- In a period of falling rates, bullet securities, with higher duration and positive convexity, provide more growth than callables.



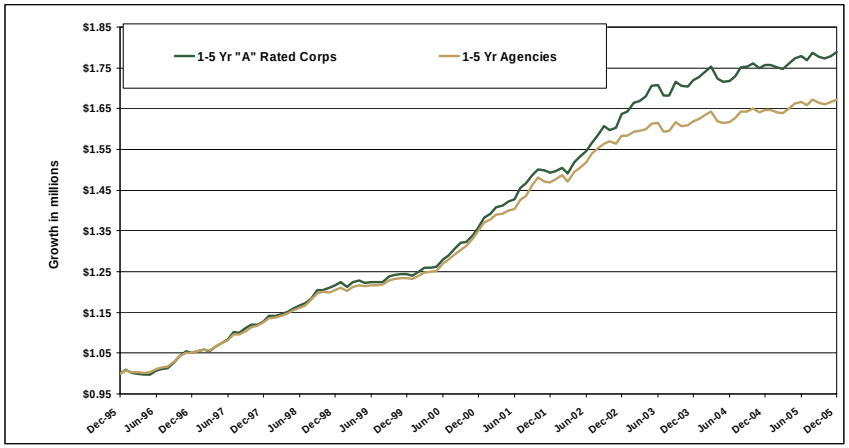

- But when rates are stable, or rise, callables, with their generally higher coupons, tend to outperform bullets, especially after the initial duration extension is complete.

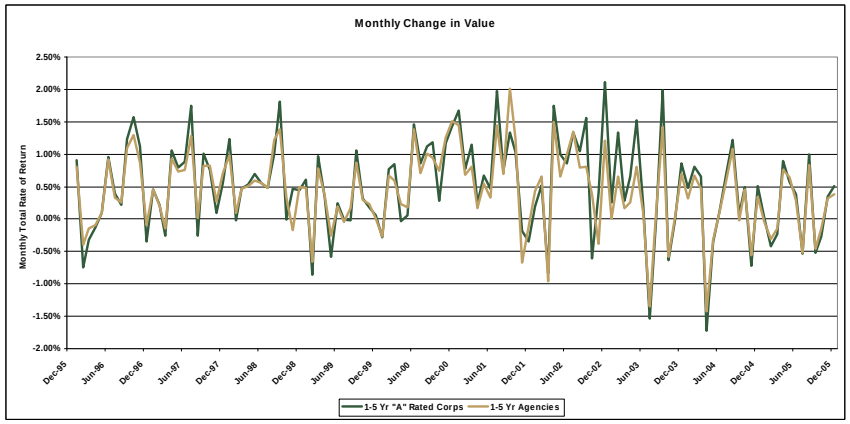
# Credit risk

- Investors receive higher yields when they purchase securities from lower rated issuers
  - Agencies vs. Treasuries
  - Corporates vs. Agencies
  - “A” vs. AAA
- Credit ratings change over time
- Yield spreads among different quality sectors vary over time

# Credit risk—the opportunity

- Assuming additional credit risk should result in higher returns over time




- With a similar pattern of volatility of return

# Credit risk—the tradeoff

- Assuming credit risk requires that additional resources be devoted to the investment program
  - Moody's/S&P ratings, watch lists, outlook
    - At time of purchase and
    - On a regular basis
  - Supplemented by
    - Third party sources
    - Internally generated credit research

# Source of Return

- Coupon Income
- Realized and unrealized gain or loss
- Reinvestment income

# Investment Instruments

# Investment Instruments

- Treasury securities
  - Bills, notes, bonds
- Agency securities
  - Discount notes, coupon notes, callable securities
- Commercial paper
- Corporate bonds
- Local Government Investment Pools
- Money Market Mutual Funds
- Certificates of deposit

# Structured Securities

- Repurchase agreements
- Mortgage-backed securities
- Asset backed securities
- Floating-rate securities
- Callable bonds
  - Investor sells option to redeem bonds early to issuer
  - One-time calls, discrete calls, continuous calls
  - Step-up coupon calls

# Portfolio Strategies

# Strategy

- The Investment Policy serves as the foundation for implementing the investment program
- The objectives for safety, liquidity and growth are determined
- The investment strategy is developed to create the risk profile to meet the objectives
- An appropriate benchmark that represents the market exposure of the portfolio is selected

# Portfolio Strategies

- Considerations
  - Objectives, constraints, risk tolerances
  - Passive *versus* Active *versus* Passive/Active Hybrid
  - Benchmark
  - Managing risk profile
  - Disciplined process
  - Evaluating performance

# Passive, Active, Hybrid Management

- **Passive** – routine process; little market analysis
  - Liquidity pool; buy and hold; benchmarking
- **Active** – ongoing market analysis
  - Duration management; yield curve placement; sector weighting; individual security selection; market timing
- **Passive/Active Hybrid** – ongoing market analysis
  - Enhanced benchmarking – minor mismatches to benchmark risk factors

# What is a benchmark?

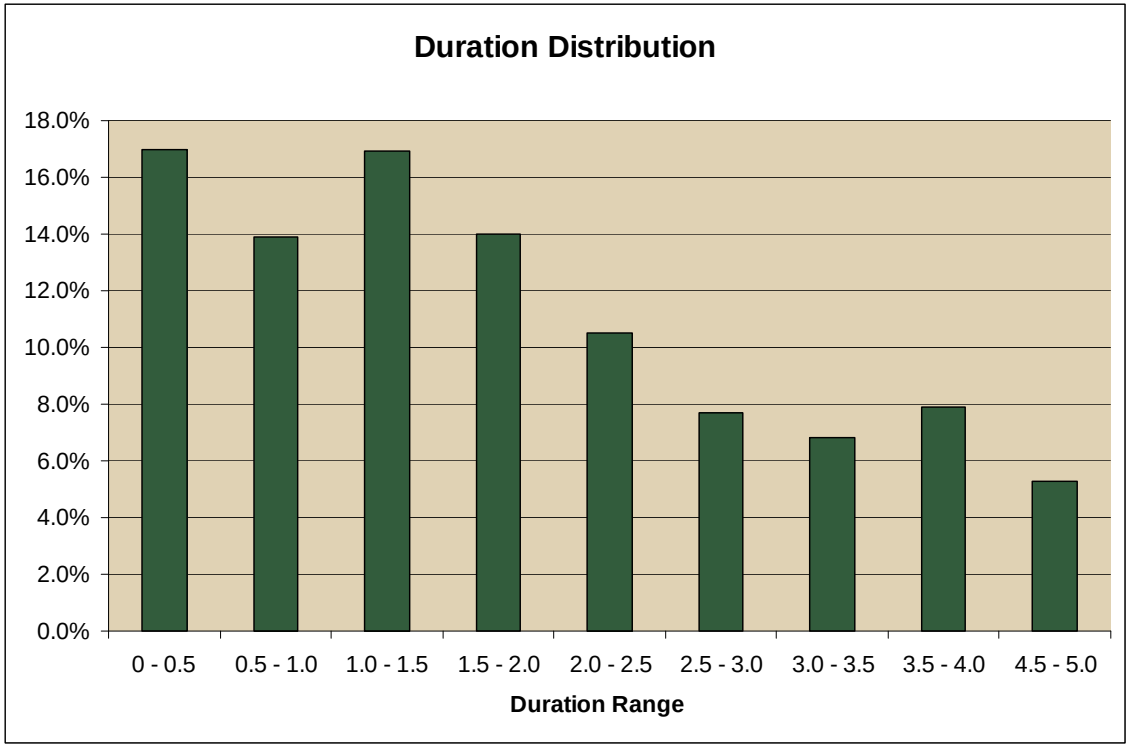
- An unmanaged portfolio that includes the types and maturities of securities that are permitted in the investor's policies
- Examples
  - S&P 500 Index for stocks
  - Index of 1-3 year government notes
  - Index of 1-5 year government and corporate securities rated "A" or higher

# What makes a good benchmark?

- Representative of assets in which the fund may invest
- Constructed in a disciplined and objective manner
- Formulated from publicly available information
- Exhibit similar risk characteristics as the investment objectives
- The information derived from both the benchmark and the portfolio should use the same calculation methods
- Known in advance

# Sample benchmark

- The benchmark represents the appropriate market for the local agency
- Index of 0-5 Year Government Securities
  - Treasury securities with a maturity range of 0 to 5 years
  - Agency securities with a maturity range of 1 to 5 years



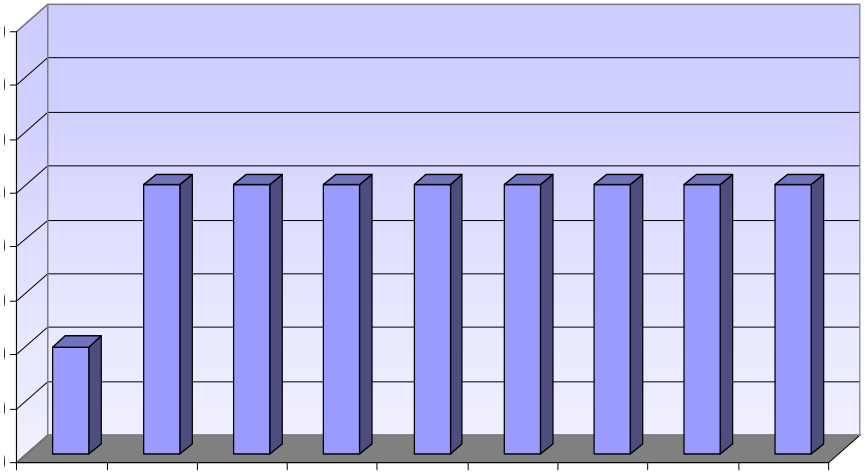

- Min Mat = 0.0 year
- Max Mat = 5.0 years
- Duration (3/31/07) = 1.72

# Managing Sector Allocation

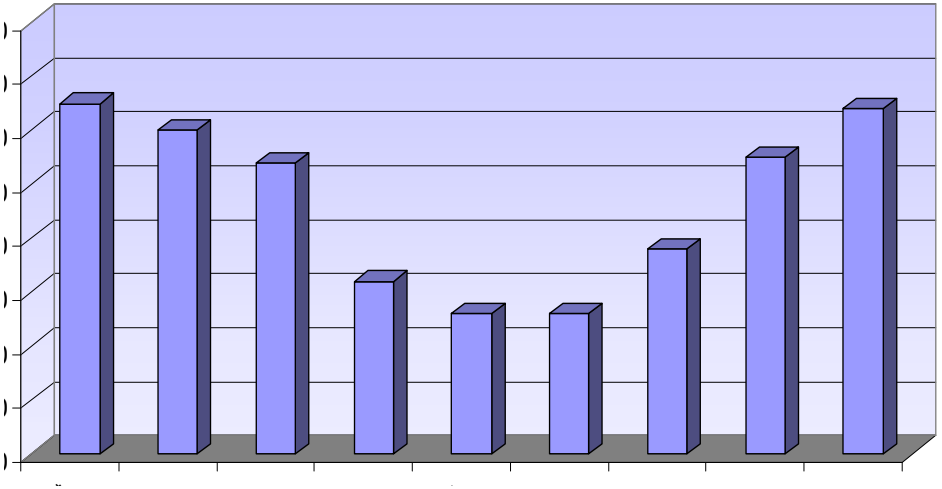
| | *Benchmark Index* | *Active Sector Allocation* |
|---|---|---|
| **Treasuries** | 46% | 24% |
| **Agencies** | 36% | 40% |
| **Corporate MTN** | 18% | 23% |
| **Commercial Paper** | 0% | 8% |
| **MBS** | 0% | 0% |
| **Asset-backed** | 0% | 4% |
| **Money Market Fund** | 0% | 1% |

# Maturity Structures

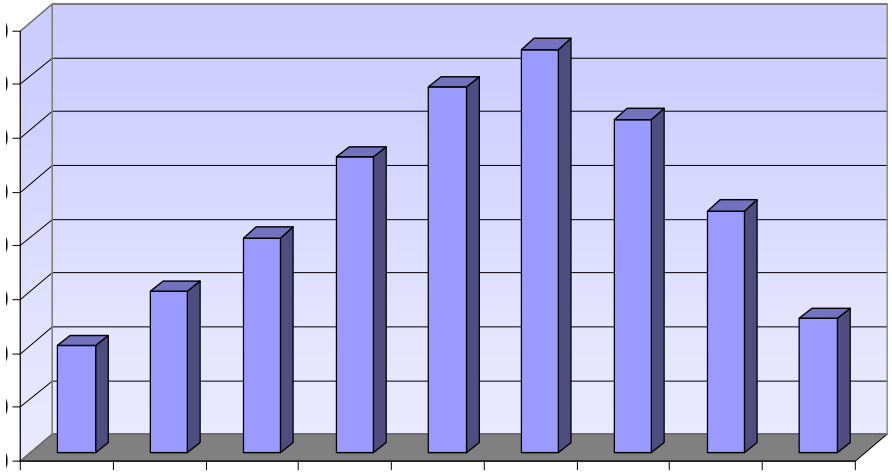
## Ladder



## Barbell



## Bullet



# Disciplined Process

- Maintain risk profile of benchmark
  - Diversification
- Duration management within defined band (e.g. +/- 10%)
- Avoid the ***"Interest Rate Game";*** you have to be right on:
  - Direction
  - Magnitude
  - Timing

# Evaluating the Investment Program

# What can we learn?

- What was the outcome of the efforts made in the investment program during the period?

- How does that compare to**...**
  - The set of opportunities that was available in the market
  - The particular parameters of the agency's profile

# Evaluating return

- Yield: income from current and new investments + projection of income from reinvestment
  - Used to project income for line item in next year budget
  - And often, to compare portfolio return to a yield benchmark
- Realized return:  Adds realized gains and losses
  - No realized yield benchmark
  - Return information can be distorted
- Total Rate of Return
  - Incorporates all elements of return – income, gains and losses, reinvestment of cash flows
  - Can be used to provide comparable results in a consistent format

# Summary

- Investment Framework
  - Key terms
  - Investment Policy
  - Objectives
  - Risk and reward
- Portfolio Management
  - Investment instruments
  - Strategy – passive, active, benchmarks, term structure
  - Evaluating the investment program

# Biographical Information

**Henry W. Stern**

**City Treasurer**

**City of Anaheim**

**hstern@anaheim.net**

**714.765.5117**

Henry W. Stern, City Treasurer, was appointed City Treasurer by the City Council on January 9, 2007, and took office effective January 29, 2007. Mr. Stern's public sector experience of over 27 years includes Chief Investment Officer for the City of Los Angeles, and investment officer for the City's of Long Beach and Lakewood, California. He received a Bachelor's Degree in Political Science and a Master's Degree in Public Administration from California State University, Long Beach. Mr. Stern received his Certified Treasury Professional (CTP) designation from the Association of Finance Professionals in 2001 and has been recertified in 2004 and 2007.

His professional memberships include the Association of Finance Professionals, California Municipal Treasurer's Association (CMTA), Association of Professional Treasurer's of United States and Canada (APT US&C), Government Finance Officer's Association (GFOA) and the National Association of Government Deferred Contribution Administrators (NAGDCA). Mr. Stern is a frequent speaker and presenter at the above professional organizations.

The City Treasurer's responsibilities for the City of Anaheim include cash management, investment of City funds, administrator of the City's deferred compensation and retiree health savings programs and investment advisor for the City's outstanding debt issues.

# Biographical Information

**Martin Cassell, CFA**

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**858.546.3737**

Martin Cassell is the Executive Vice President and Chief Investment Officer at Chandler, and is principal of the firm. As CIO, Mr. Cassell is responsible for setting portfolio strategy and oversight of portfolio risk management. He designed the proprietary quantitative models that drive our investment process, establishing duration structure and asset allocation across all client portfolios. Martin is an integral part of the investment advisory team for all of our clients, and also oversees the efforts of the portfolio management team and the firm's operation department. His expertise has been called upon for articles in investment management publications, educational courses and live webcasts.

Mr. Cassell brings eighteen years of experience managing institutional fixed-income portfolios. He joined Chandler Asset Management in 1991 from the City of San Diego where he managed a $1 billion fixed income portfolio. He began his investment career at World Savings and Loan in 1987, where he managed the liquidity portfolio, futures hedging program and medium term note issuance.

He received a Bachelor of Science degree in Finance from California State University, Hayward. Martin is a member of the San Diego Financial Analyst Society and holds the designation of Chartered Financial Analyst (CFA).

# Book Resources


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